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PANDA - Cold TAS going thermal

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PANDA is the cold three-axis spectrometer (TAS) at MLZ, successfully serving scientists from around the world since 2005. In preparation for continued user operations, the instrument has undergone comprehensive maintenance and upgrades. It is now equipped with a new PG-002 monochromator, a versatile sample table capable of supporting cryomagnets, and an ADR cryostat operating from room temperature down to 300 mK (and 100 mK in single-shot mode), all within a single setup.

Due to the thermal overlap in the incoming spectrum, PANDA will be ready for experiments immediately upon the restart of user operations. To further optimize performance, the Cu-111 and bent Si-111 monochromators can be used to extend the energy range or minimize second-order contamination, respectively. Simulations indicate that the incoming flux at the sample position will reach $(0.5\text{--}1) \times 10^8 \text{ n/cm}^2/\text{s}$, enabling standard PG-filter experiments for energy transfers up to $\Delta E \approx 35 \text{ meV}$, as well as high-resolution Be-filter experiments for $\Delta E \approx 15 \text{ meV}$, though with intensities reduced by a factor of ~ 2.5 compared to standard reactor operation.

A key aspect of PANDA's restart will be the commissioning of the BAMBUS multiplexing option. Although it is designed for a cold spectrum, immediate tests, background characterization, and software validation are needed to enable its use for Be-filter experiments on, e.g., strongly scattering samples as soon as possible.

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